

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the

application:

1 (previously presented). A process for the oxidation of a C₂ to C₄ alkane to produce the corresponding alkene and carboxylic acid which process comprises:
contacting in an oxidation reaction zone, said alkane, molecular oxygen-containing gas and the corresponding alkene in the presence of at least one catalyst active for the oxidation of the alkane to the corresponding alkene and carboxylic acid, to produce a product stream comprising alkene, carboxylic acid and water; and
adjusting or maintaining the molar ratio of alkene produced in said oxidation reaction zone to carboxylic acid produced in said oxidation reaction zone by controlling the concentration of the alkene introduced in said oxidation reaction zone.

2 (previously presented). An integrated process for the production of an alkyl carboxylate which process comprises the steps:

(a) contacting in an oxidation reaction zone a C₂ to C₄ alkane, a molecular oxygen-containing gas and the corresponding alkene in the presence of at least one catalyst active for the oxidation of the alkane to the corresponding alkene and carboxylic acid, to produce a product stream comprising alkene and carboxylic acid and water; adjusting or maintaining the molar ratio of alkene produced in said oxidation reaction zone to carboxylic acid produced in said oxidation reaction zone by controlling the concentration of alkene introduced in said oxidation reaction zone; and

(b) contacting in a second reaction zone at least a portion of each of said alkene and carboxylic acid produced in the first reaction zone, in the presence of at least one catalyst active for the production of alkyl carboxylate to produce said alkyl carboxylate.

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3 (previously presented). An integrated process for the production of an alkenyl carboxylate which process comprises the steps:

(a) contacting in an oxidation reaction zone a C₂ to C₄ alkane, a molecular oxygen-containing gas, and the corresponding alkene and optionally, water in the presence of at least one catalyst active for the oxidation of the alkane to the corresponding alkene and carboxylic acid, to produce a product stream comprising alkene and carboxylic acid and water; adjusting or maintaining the molar ratio of alkene produced in said reaction zone to carboxylic acid produced in said oxidation reaction in the ratio 1:10 to 10:1 zone by controlling the concentration of alkene introduced in said oxidation reaction zone; and

(b) contacting in a second reaction zone at least a portion of each of said alkene and carboxylic acid produced in the first reaction zone and a molecular oxygen-containing gas, in the presence of at least one catalyst active for the production of alkenyl carboxylate to produce said alkenyl carboxylate.

4 (previously presented). A process as claimed in claim 1, 2 or 3 in which the molar ratio of alkene to carboxylic acid produced in the oxidation reaction zone is in the range 10:1 to 1:10.